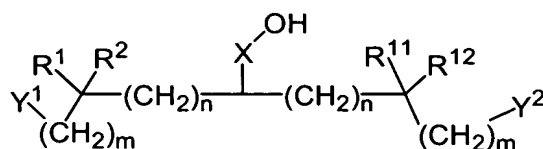


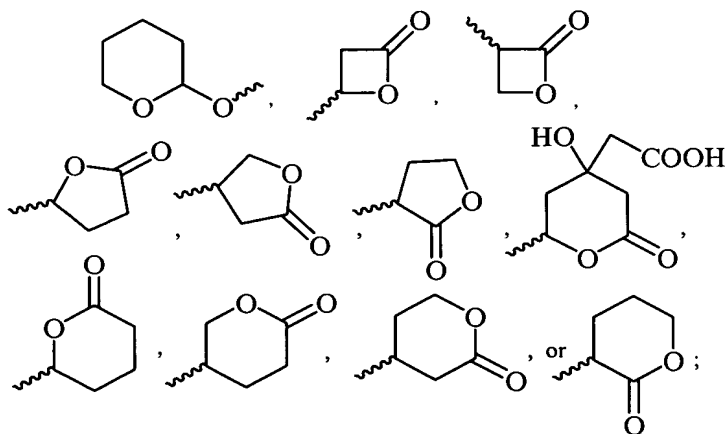
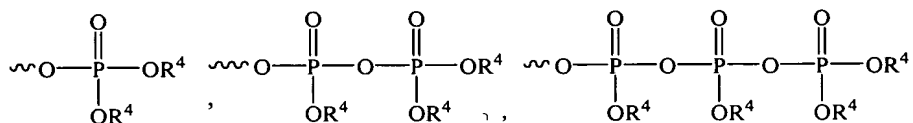
**WHAT IS CLAIMED:**

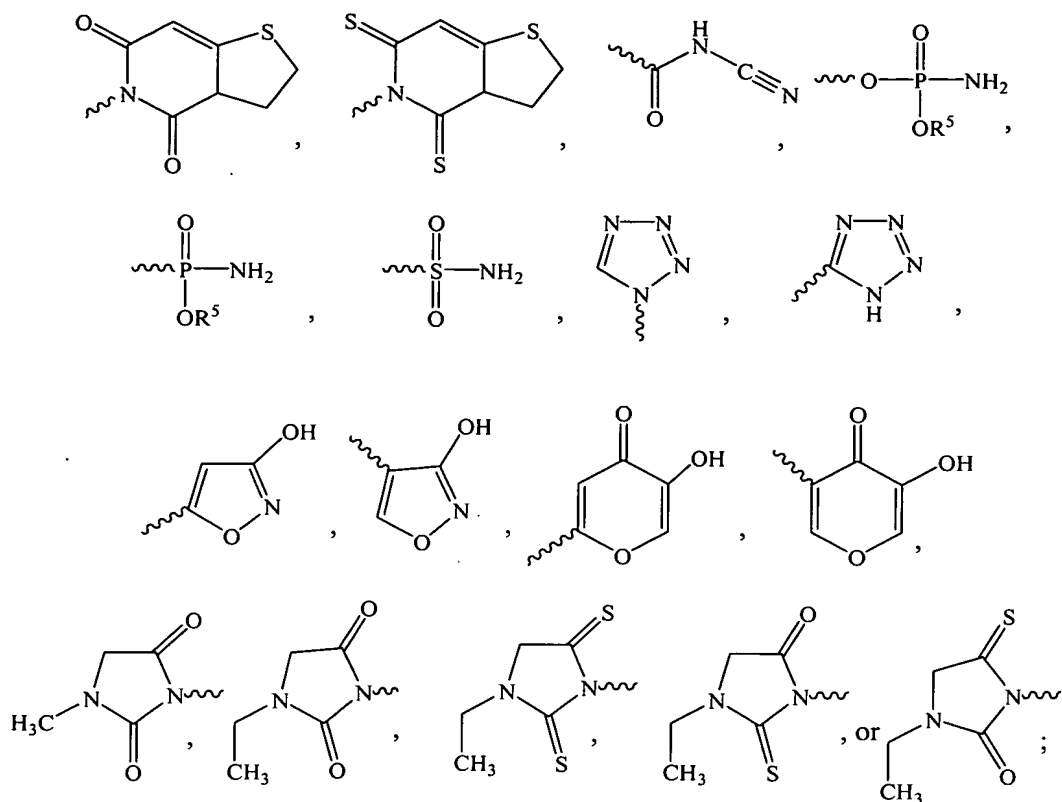
1. A compound of the formula I:



# I

- 5 or a pharmaceutically acceptable salt, hydrate, solvate or mixture thereof, wherein:
- (a) each occurrence of m is independently an integer ranging from 0 to 5;
  - (b) each occurrence of n is independently an integer ranging from 3 to 7;
  - (c) X is  $(CH_2)_z$  or Ph, wherein z is an integer from 0 to 4 and Ph is a 1,2-, 1,3-, or 1,4 substituted phenyl group;
  - 10 (d) each occurrence of  $R^1$ ,  $R^2$ ,  $R^{11}$ , and  $R^{12}$  is independently H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl, phenyl, or benzyl, wherein  $R^1$ ,  $R^2$ ,  $R^{11}$ , and  $R^{12}$  are not each simultaneously H; and
  - (e) each occurrence of  $Y^1$  and  $Y^2$  is independently  $(C_1-C_6)$ alkyl, OH, COOH, COOR<sup>3</sup>, SO<sub>3</sub>H,





wherein:

(i)  $Y^1$  and  $Y^2$  are not each simultaneously  $(C_1-C_6)$ alkyl;

(ii)  $R^3$  is  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl, phenyl, or benzyl and is unsubstituted or substituted with one or more halo, OH,  $(C_1-C_6)$ alkoxy, or phenyl groups,

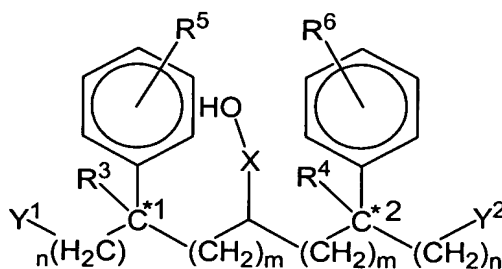
(iii) each occurrence of  $R^4$  is independently H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl, or  $(C_2-C_6)$ alkynyl and is unsubstituted or substituted with one or two halo, OH,  $C_1-C_6$  alkoxy, or phenyl groups; and

(iv) each occurrence of  $R^5$  is independently H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl, or  $(C_2-C_6)$ alkynyl.

2. The compound of claim 1, wherein each occurrence of  $Y^1$  and  $Y^2$  is independently OH,  $COOR^3$ , or  $COOH$ .

3. The compound of claim 1, wherein m is 0.

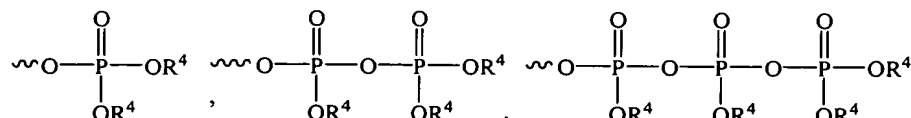
4. The compound of claim 1, wherein m is 1.
5. The compound of claim 1, wherein n is 4.
6. The compound of claim 1, wherein n is 5.
7. The compound of claim 1, wherein z is 0.
8. The compound of claim 1, wherein z is 1.
9. The compound of claim 1, wherein Y<sup>1</sup> is (C<sub>1</sub>-C<sub>6</sub>)alkyl and Y<sup>2</sup> is OH.
10. The compound of claim 1, wherein Y<sup>1</sup> is methyl and Y<sup>2</sup> is OH.
11. A compound of formula II:

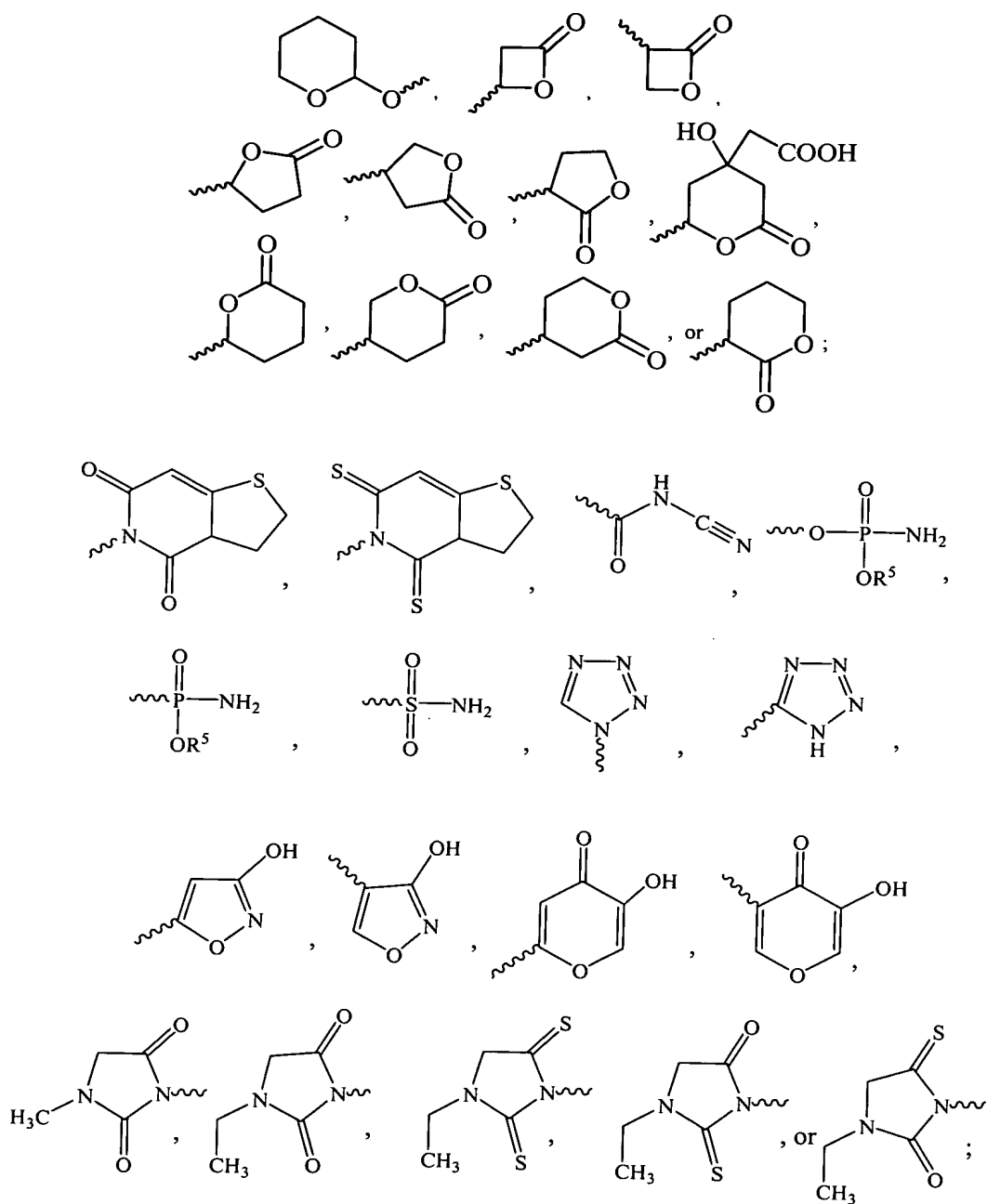


**II**

or a pharmaceutically acceptable salt, hydrate, solvate, or mixture thereof, wherein:

- (a) each occurrence of m is independently an integer ranging from 3 to 7;
- (b) each occurrence of n is independently an integer ranging from 0 to 5;
- (c) X is (CH<sub>2</sub>)<sub>z</sub> or Ph, wherein z is an integer from 0 to 4 and Ph is a 1,2-, 1,3-, or 1,4 substituted phenyl group;
- (d) each occurrence of Y<sup>1</sup> and Y<sup>2</sup> independently (C<sub>1</sub>-C<sub>6</sub>)alkyl, OH, COOH, COOR<sup>7</sup>, SO<sub>3</sub>H,





wherein:

5

(i) R<sup>7</sup> is (C<sub>1</sub>–C<sub>6</sub>)alkyl, (C<sub>2</sub>–C<sub>6</sub>)alkenyl, (C<sub>2</sub>–C<sub>6</sub>)alkynyl, phenyl, or benzyl and is unsubstituted or substituted with one or more halo, OH, (C<sub>1</sub>–C<sub>6</sub>)alkoxy, or phenyl groups,

(ii) each occurrence of R<sup>8</sup> is independently H, (C<sub>1</sub>–C<sub>6</sub>)alkyl, (C<sub>2</sub>–C<sub>6</sub>)alkenyl, or (C<sub>2</sub>–C<sub>6</sub>)alkynyl and is unsubstituted or substituted with one or two halo, OH, C<sub>1</sub>–C<sub>6</sub> alkoxy, or phenyl groups,

10

(iii) each occurrence of  $R^9$  is independently H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl, or  $(C_2-C_6)$ alkynyl;

- (e)  $R^3$  and  $R^4$  are  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl, phenyl, or benzyl;
- (f)  $R^5$  and  $R^6$  are H, halogen,  $(C_1-C_4)$ alkyl,  $(C_1-C_4)$ alkoxy,  $(C_6)$ aryloxy, CN, or  $NO_2$ ,  
5  $N(R^5)_2$  where  $R^5$  is H,  $(C_1-C_4)$  alkyl, phenyl, or benzyl;
- (g)  $C^{*1}$  and  $C^{*2}$  represent independent chiral-carbon centers wherein each center may independently be R or S.

12. The compound of claim 11, wherein each occurrence of  $Y^1$  and  $Y^2$  is independently OH,  $COOR^7$ , or COOH.

10 13. The compound of claim 11, wherein m is 4.

14. The compound of claim 11, wherein m is 5.

15. The compound of claim 11, wherein X is  $(CH_2)_z$  and z is 0.

16. The compound of claim 11, wherein X is  $(CH_2)_z$  and z is 1.

17. The compound of claim 11, wherein each of  $Y^1$  and  $Y^2$  is  $C(O)OH$  or  
15  $CH_2OH$ .

18. The compound of claim 11, wherein  $R^3$  and  $R^4$  are each independently  $(C_1-C_6)$  alkyl.

19. The compound of claim 11, wherein  $R^3$  and  $R^4$  are each methyl.

20. The compound of claim 11, wherein  $C^{*1}$  is of the stereochemical  
20 configuration R or substantially R.

21. The compound of claim 11, wherein  $C^{*1}$  is of the stereochemical configuration S or substantially S.

22. The compound of claim 11, wherein C\*<sup>2</sup> is of the stereochemical configuration R or substantially R.

23. The compound of claim 11, wherein C\*<sup>2</sup> is of the stereochemical configuration S or substantially S.

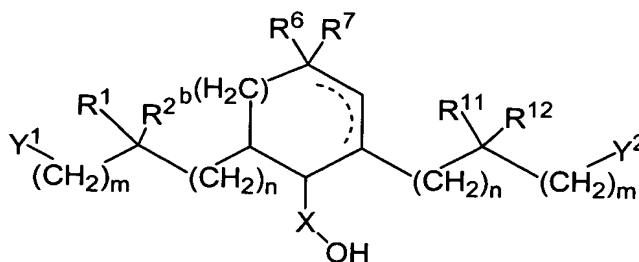
5 24. The compound of claim 11, wherein C\*<sup>1</sup> and C\*<sup>2</sup> are of the stereochemical configuration (S<sup>1</sup>, S<sup>2</sup>) or substantially (S<sup>1</sup>, S<sup>2</sup>).

25. The compound of claim 11, wherein C\*<sup>1</sup> and C\*<sup>2</sup> are of the stereochemical configuration (S<sup>1</sup>, R<sup>2</sup>) or substantially (S<sup>1</sup>, R<sup>2</sup>).

10 26. The compound of claim 11, wherein C\*<sup>1</sup> and C\*<sup>2</sup> are of the stereochemical configuration (R<sup>1</sup>, R<sup>2</sup>) or substantially (R<sup>1</sup>, R<sup>2</sup>).

27. The compound of claim 11, wherein C\*<sup>1</sup> and C\*<sup>2</sup> are of the stereochemical configuration (R<sup>1</sup>, S<sup>2</sup>) or substantially (R<sup>1</sup>, S<sup>2</sup>).

28. A compound of the formula III:

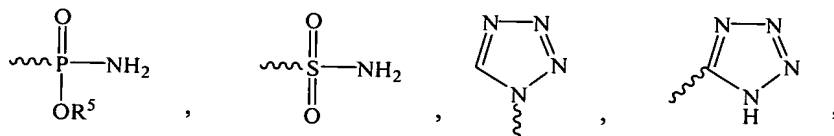
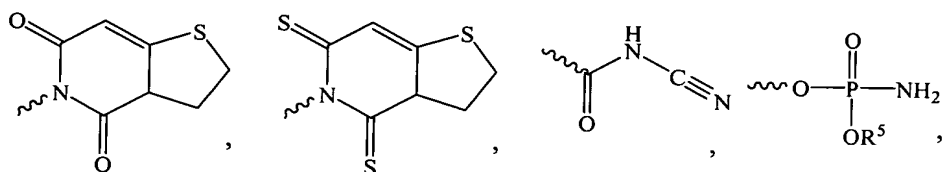
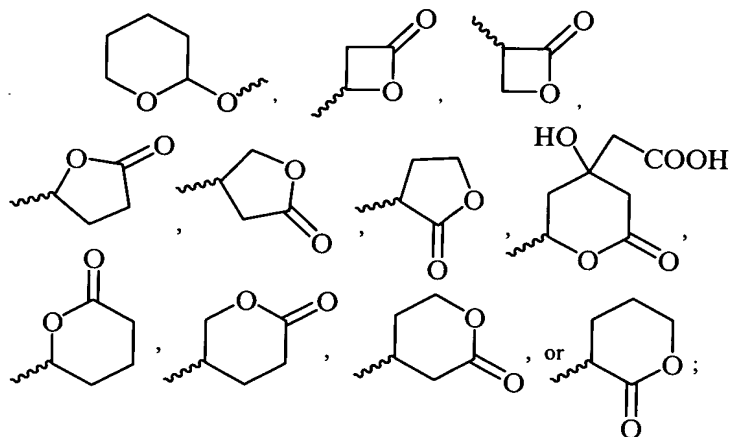
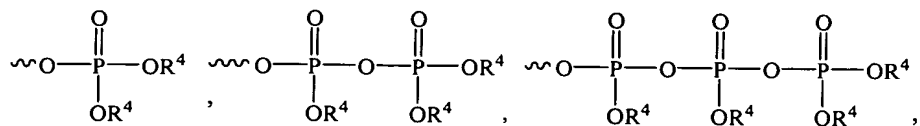


III

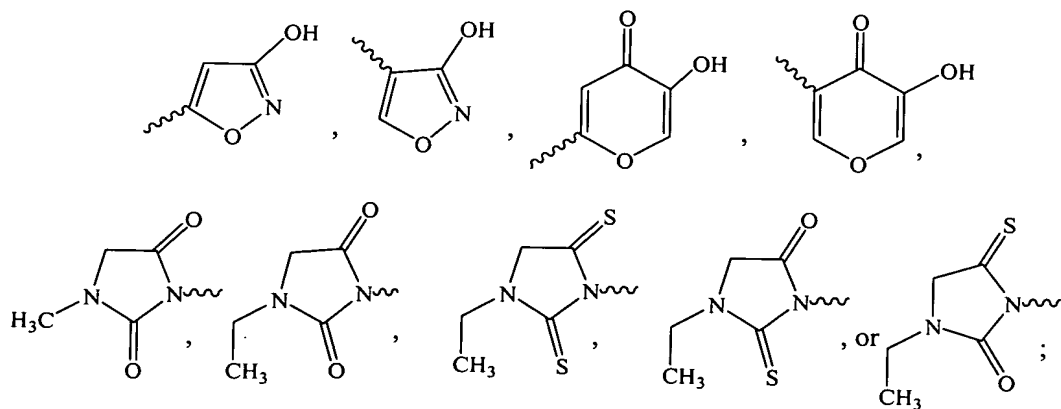
or a pharmaceutically acceptable salt, hydrate, solvate, or mixture thereof, wherein

- (a) each occurrence of R<sup>1</sup>, R<sup>2</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>11</sup>, or R<sup>12</sup> is independently hydrogen, (C<sub>1</sub>–C<sub>6</sub>)alkyl, (C<sub>2</sub>–C<sub>6</sub>)alkenyl, (C<sub>2</sub>–C<sub>6</sub>)alkynyl, phenyl, or benzyl;
- (b) each occurrence of n is independently an integer ranging from 1 to 7;
- 20 (c) X is (CH<sub>2</sub>)<sub>z</sub> or Ph, wherein z is an integer from 0 to 4 and Ph is a 1,2-, 1,3-, or 1,4 substituted phenyl group;
- (d) each occurrence of m is independently an integer ranging from 0 to 4;

- (e) each occurrence of  $Y^1$  and  $Y^2$  is independently  $(C_1-C_6)$ alkyl,  $CH_2OH$ ,  $C(O)OH$ ,  $OC(O)R^3$ ,  $C(O)OR^3$ ,  $SO_3H$ ,



5



wherein:

5

(i)  $R^3$  is  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl, phenyl, or benzyl and is unsubstituted or substituted with one or more halo, OH,  $(C_1-C_6)$ alkoxy, or phenyl groups,

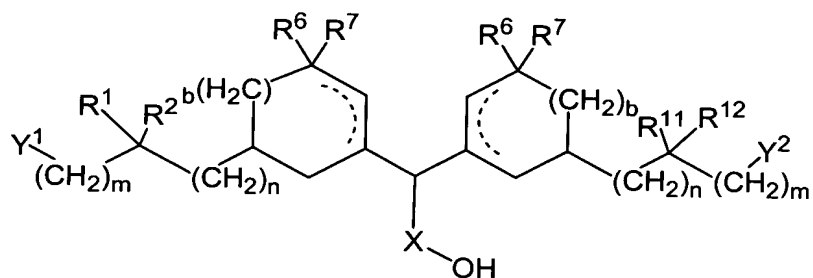
(ii) each occurrence of  $R^4$  is independently H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl, or  $(C_2-C_6)$ alkynyl and is unsubstituted or substituted with one or two halo, OH,  $C_1-C_6$  alkoxy, or phenyl groups;

(iii) each occurrence of  $R^5$  is independently H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl, or  $(C_2-C_6)$ alkynyl; and

10

(f) b is 0 or 1 and optionally the ring contains the presence of one or more additional carbon-carbon bonds that when present complete one or more carbon-carbon double bonds such that when b is 0 the maximum number of carbon-carbon bonds is two or when b is 1 the maximum number of carbon-carbon bonds is three.

29. A compound of the formula IV:



15

IV

or a pharmaceutically acceptable salt, hydrate, solvate, or mixture thereof, wherein

(a) each occurrence of  $R^1$ ,  $R^2$ ,  $R^6$ ,  $R^7$ ,  $R^{11}$ , or  $R^{12}$  is independently hydrogen,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl, phenyl, or benzyl;

(b) each occurrence of n is independently an integer ranging from 1 to 7;

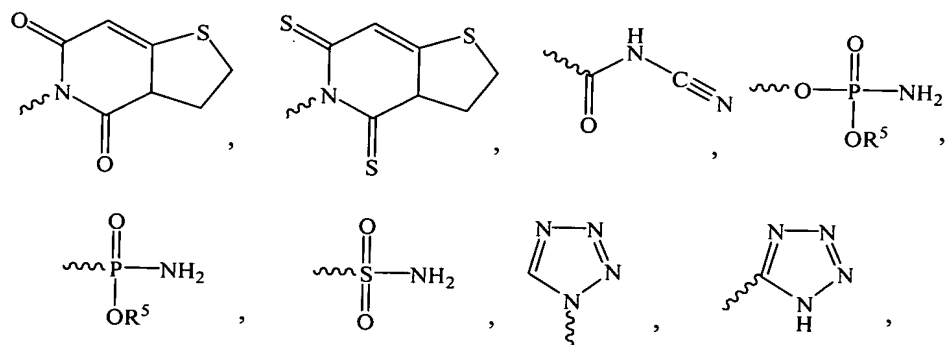
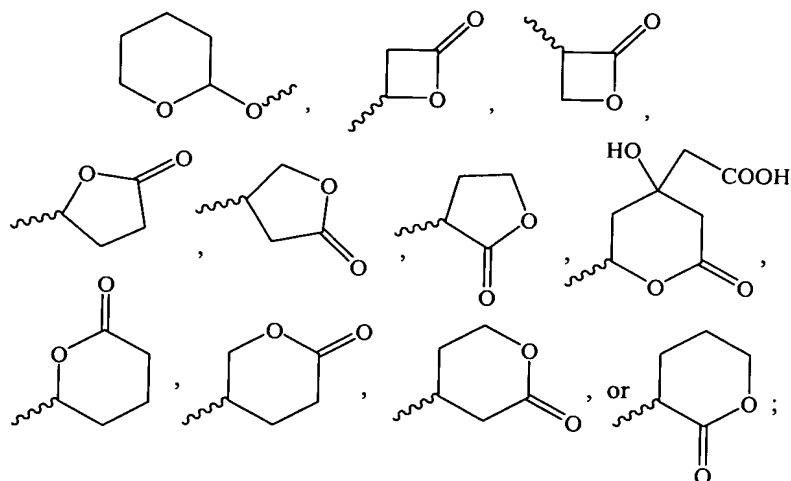
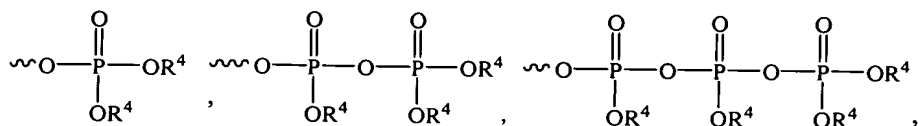
20

(c) X is  $(CH_2)_z$  or Ph, wherein z is an integer from 0 to 4 and Ph is a 1,2-, 1,3-, or 1,4 substituted phenyl group;

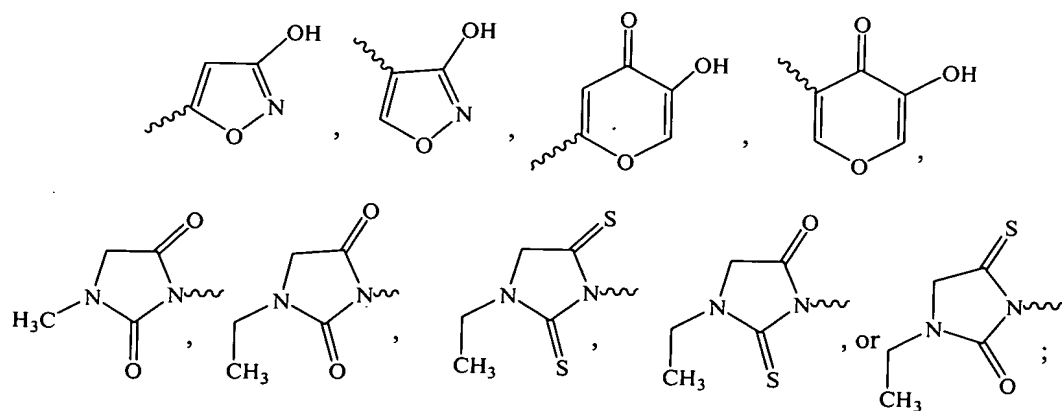
(d) each occurrence of m is independently an integer ranging from 0 to 4;



- (e) each occurrence of  $Y^1$  and  $Y^2$  is independently  $(C_1-C_6)$ alkyl,  $CH_2OH$ ,  $C(O)OH$ ,  $OC(O)R^3$ ,  $C(O)OR^3$ ,  $SO_3H$ ,



5



wherein:

5

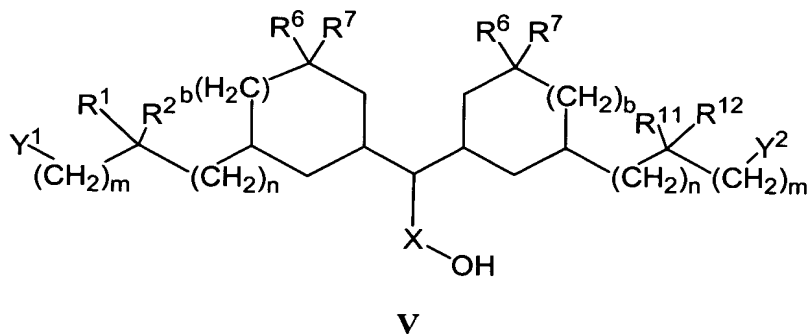
(i)  $R^3$  is  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl, phenyl, or benzyl and is unsubstituted or substituted with one or more halo, OH,  $(C_1-C_6)$ alkoxy, or phenyl groups,

(ii) each occurrence of  $R^4$  is independently H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl, or  $(C_2-C_6)$ alkynyl and is unsubstituted or substituted with one or two halo, OH,  $C_1-C_6$  alkoxy, or phenyl groups;

(iii) each occurrence of  $R^5$  is independently H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl, or  $(C_2-C_6)$ alkynyl; and

(f) each occurrence of b is independently 0 or 1 and optionally each of the rings independently contains the presence of one or more additional carbon-carbon bonds that when present complete one or more carbon-carbon double bonds such that when b is 0 the maximum number of carbon-carbon bonds is two or when b is 1 the maximum number of carbon-carbon bonds is three.

30. A compound of the formula V:

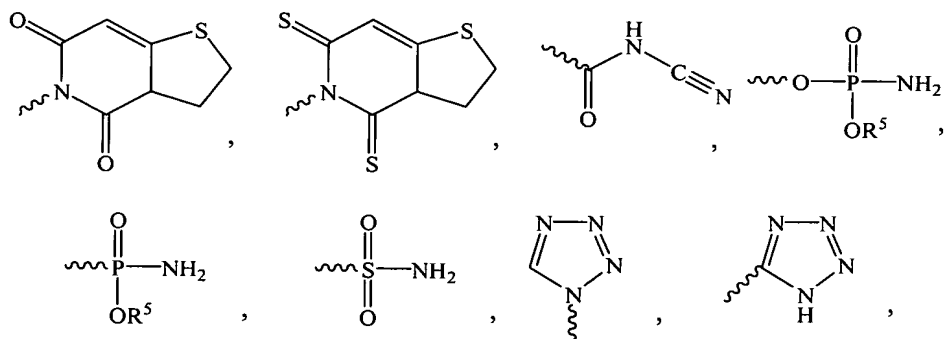
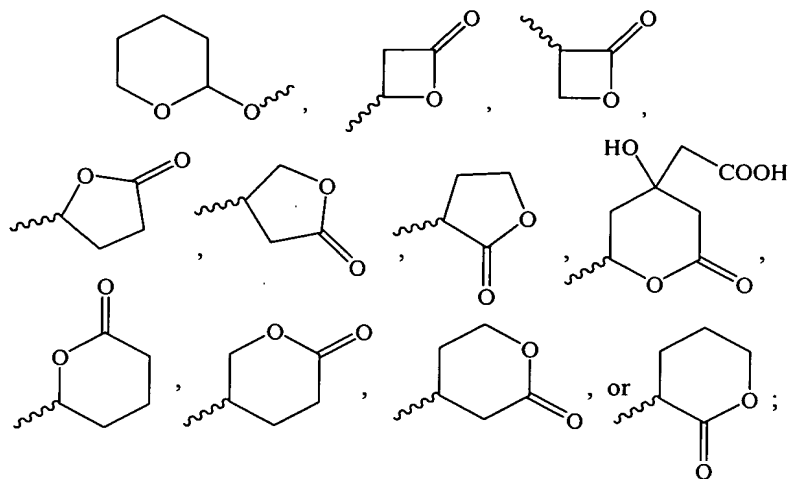
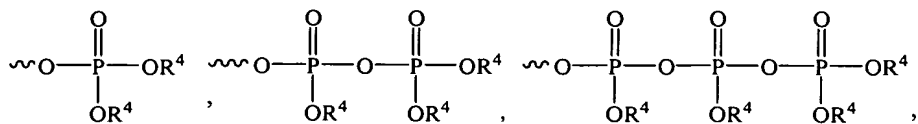


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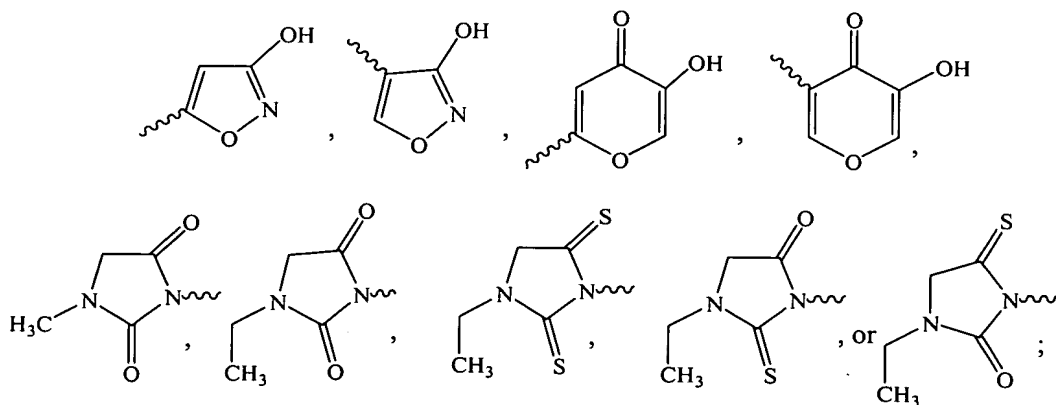
or a pharmaceutically acceptable salt, hydrate, solvate, or mixtures thereof, wherein

- (a) each occurrence of  $R^1$ ,  $R^2$ ,  $R^6$ ,  $R^7$ ,  $R^{11}$ , or  $R^{12}$  is independently hydrogen,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl, phenyl, or benzyl;
- (b) each occurrence of n is independently an integer ranging from 1 to 7;
- (c) X is  $(CH_2)_z$  or Ph, wherein z is an integer from 0 to 4 and Ph is a 1,2-, 1,3-, or 1,4 substituted phenyl group;
- (d) each occurrence of m is independently an integer ranging from 0 to 4;

- (e) each occurrence of  $Y^1$  and  $Y^2$  is independently  $(C_1-C_6)alkyl$ ,  $CH_2OH$ ,  $C(O)OH$ ,  $OC(O)R^3$ ,  $C(O)OR^3$ ,  $SO_3H$ ,



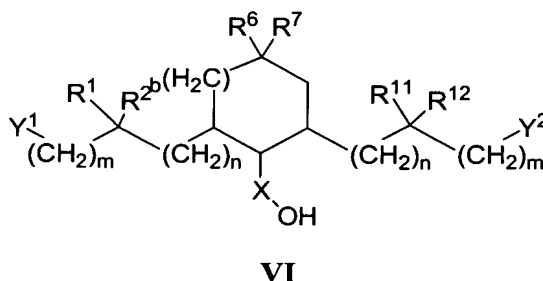
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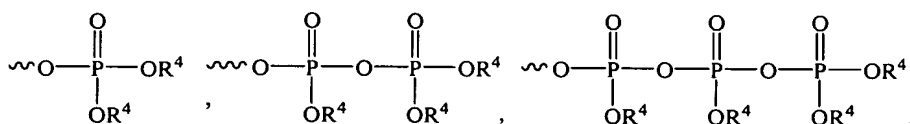
wherein:

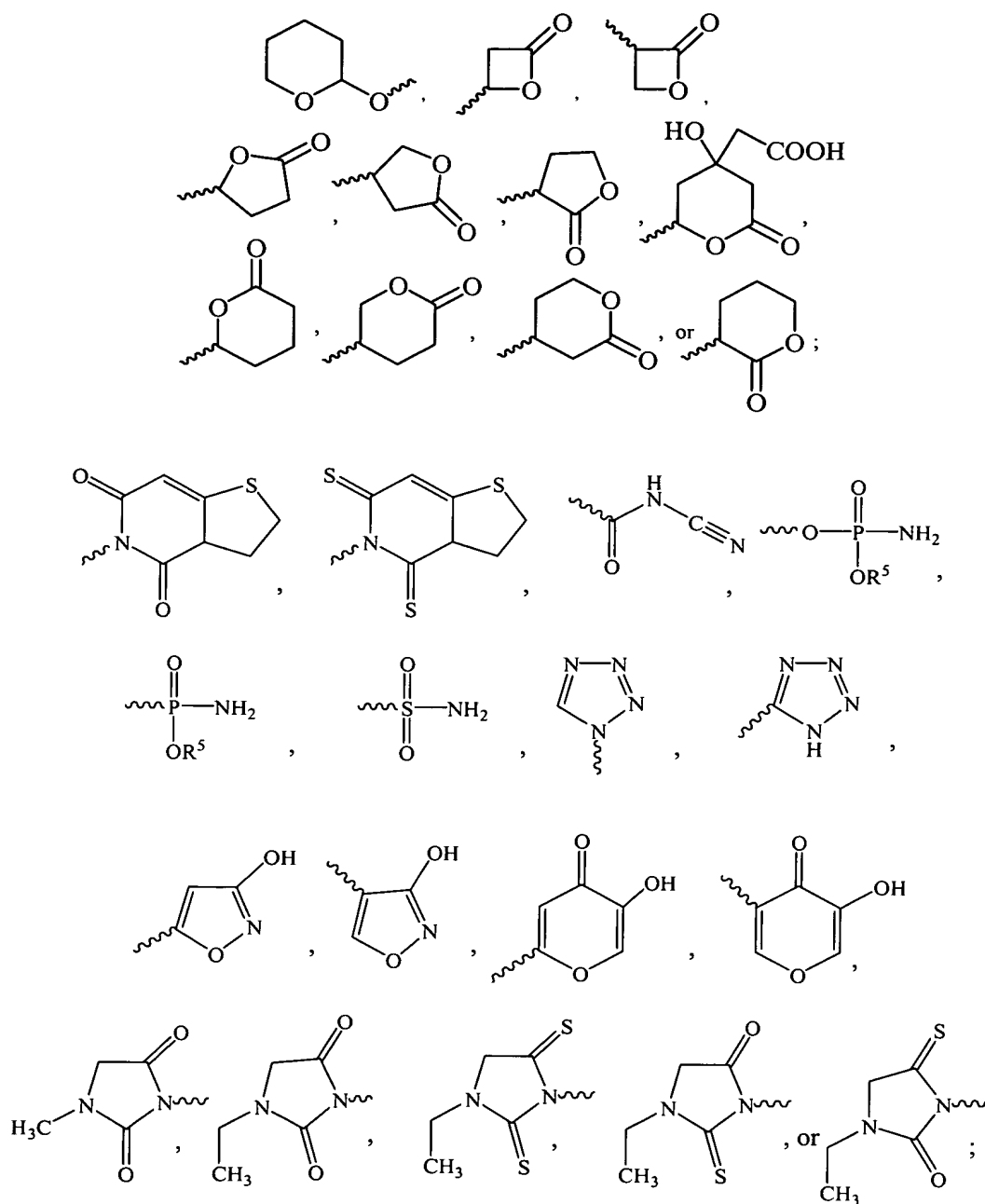
- (i)  $R^3$  is  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl, phenyl, or benzyl and is unsubstituted or substituted with one or more halo, OH,  $(C_1-C_6)$ alkoxy, or phenyl groups,
- (ii) each occurrence of  $R^4$  is independently H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl, or  $(C_2-C_6)$ alkynyl and is unsubstituted or substituted with one or two halo, OH,  $C_1-C_6$  alkoxy, or phenyl groups;
- (iii) each occurrence of  $R^5$  is independently H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl, or  $(C_2-C_6)$ alkynyl; and
- (f) b is 0 or 1 and optionally the ring contains one or more carbon-carbon bonds that when present complete one or more carbon-carbon double bonds.

31. A compound of the formula VI:



- or a pharmaceutically acceptable salt, hydrate, solvate, or mixture thereof, wherein:
- (a) each occurrence of  $R^1$ ,  $R^2$ ,  $R^6$ ,  $R^7$ ,  $R^{11}$ , or  $R^{12}$  is independently hydrogen,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl, phenyl, or benzyl;
- (b) each occurrence of n is independently an integer ranging from 1 to 7;
- (c) X is  $(CH_2)_z$  or Ph, wherein z is an integer from 0 to 4 and Ph is a 1,2-, 1,3-, or 1,4 substituted phenyl group;
- (d) each occurrence of m is independently an integer ranging from 0 to 4;
- (e) each occurrence of  $Y^1$  and  $Y^2$  is independently  $(C_1-C_6)$ alkyl,  $CH_2OH$ ,  $C(O)OH$ ,  $OC(O)R^3$ ,  $C(O)OR^3$ ,  $SO_3H$ ,





wherein:

5

(i)  $R^3$  is  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl, phenyl, or benzyl and is unsubstituted or substituted with one or more halo, OH,  $(C_1-C_6)$ alkoxy, or phenyl groups,

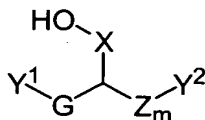
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(ii) each occurrence of  $R^4$  is independently H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl, or  $(C_2-C_6)$ alkynyl and is unsubstituted or substituted with one or two halo, OH,  $C_1-C_6$  alkoxy, or phenyl groups; and

(iii) each occurrence of  $R^5$  is independently H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl, or  $(C_2-C_6)$ alkynyl; and

- (f) b is 0 or 1 and optionally the ring contains one or more carbon-carbon bonds that when present complete one or more carbon-carbon double bonds.

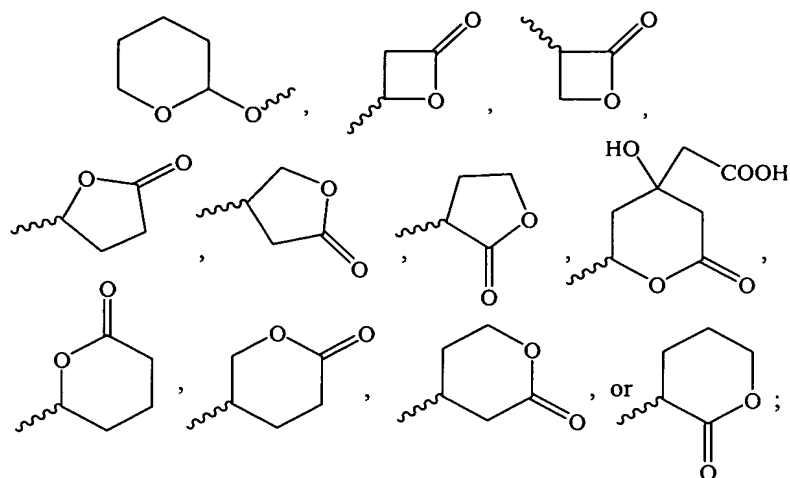
5            32.    A compound of the formula **VII**:



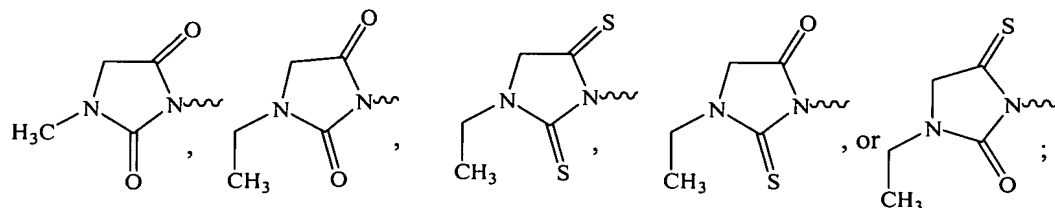
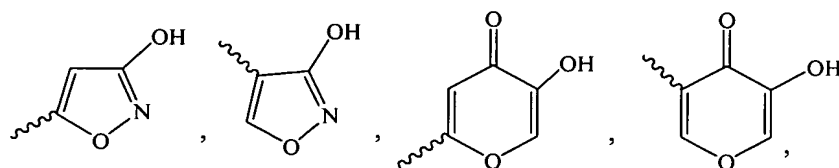
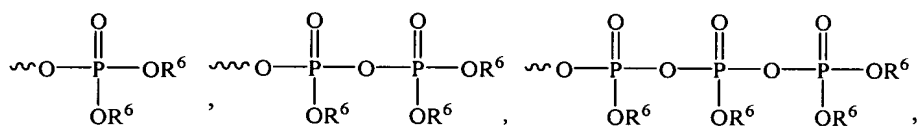
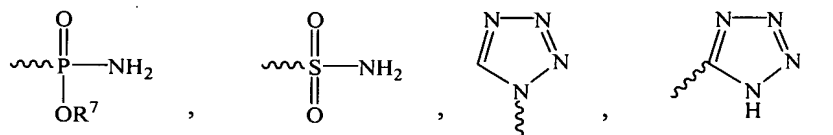
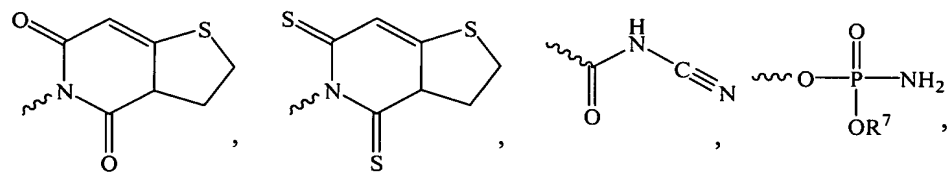
**VII**

or a pharmaceutically acceptable salt, hydrate, solvate, or mixture thereof, wherein

- (a) Z is  $\text{CH}_2$ ,  $\text{CH}=\text{CH}$ , or phenyl, where each occurrence of m is independently an integer ranging from 1 to 9, but when Z is phenyl then its associated m is 1;
- (b) G is  $(\text{CH}_2)_x$ , where x is 1, 2, 3, or 4,  $\text{CH}_2\text{CH}=\text{CHCH}_2$ ,  $\text{CH}=\text{CH}$ ,  $\text{CH}_2$ -phenyl- $\text{CH}_2$ , or phenyl;
- (c) each occurrence of  $\text{Y}^1$  and  $\text{Y}^2$  is independently L, V,  $\text{C}(\text{R}^1)(\text{R}^2)-(\text{CH}_2)_c-\text{C}(\text{R}^3)(\text{R}^4)-(\text{CH}_2)_n-\text{Y}$ , or  $\text{C}(\text{R}^1)(\text{R}^2)-(\text{CH}_2)_c-\text{V}$  where c is 1 or 2 and n is an integer ranging from 0 to 4; when G is  $(\text{CH}_2)_x$ , where x is 1, 2, 3, or 4,  $\text{W}^2$  is  $\text{CH}_3$ ;
- (d) each occurrence of  $\text{R}^1$  or  $\text{R}^2$  is independently  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl, phenyl, or benzyl or when one or both of  $\text{Y}^1$  and  $\text{Y}^2$  is  $\text{C}(\text{R}^1)(\text{R}^2)-(\text{CH}_2)_c-\text{C}(\text{R}^3)(\text{R}^4)-(\text{CH}_2)_n-\text{W}$ , then  $\text{R}^1$  and  $\text{R}^2$  can both be H to form a methylene group;
- (e)  $\text{R}^3$  is H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl,  $(C_1-C_6)$ alkoxy, phenyl, benzyl, Cl, Br, CN,  $\text{NO}_2$ , or  $\text{CF}_3$ ;
- (f)  $\text{R}^4$  is OH,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl,  $(C_1-C_6)$ alkoxy, phenyl, benzyl, Cl, Br, CN,  $\text{NO}_2$ , or  $\text{CF}_3$ ;
- (g) L is  $\text{C}(\text{R}^1)(\text{R}^2)-(\text{CH}_2)_n-\text{W}$ ;
- (h) V is:



(i) each occurrence of W is independently OH, COOH, CHO, COOR<sup>5</sup>, SO<sub>3</sub>H,



5

wherein:

(i) R<sup>5</sup> is (C<sub>1</sub>–C<sub>6</sub>)alkyl, (C<sub>2</sub>–C<sub>6</sub>)alkenyl, (C<sub>2</sub>–C<sub>6</sub>)alkynyl, phenyl, or benzyl and is unsubstituted or substituted with one or more halo, OH, (C<sub>1</sub>–C<sub>6</sub>)alkoxy, or phenyl groups,

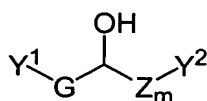
(ii) each occurrence of  $R^6$  is independently H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl, or  $(C_2-C_6)$ alkynyl and is unsubstituted or substituted with one or two halo, OH,  $(C_1-C_6)$  alkoxy, or phenyl groups;

(iii) each occurrence of  $R^7$  is independently H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl, or  $(C_2-C_6)$ alkynyl; and

5

(j) X is  $(CH_2)_z$  or Ph, wherein z is an integer from 0 to 4.

33. A compound of the formula **VIII**:



10

**VIII**

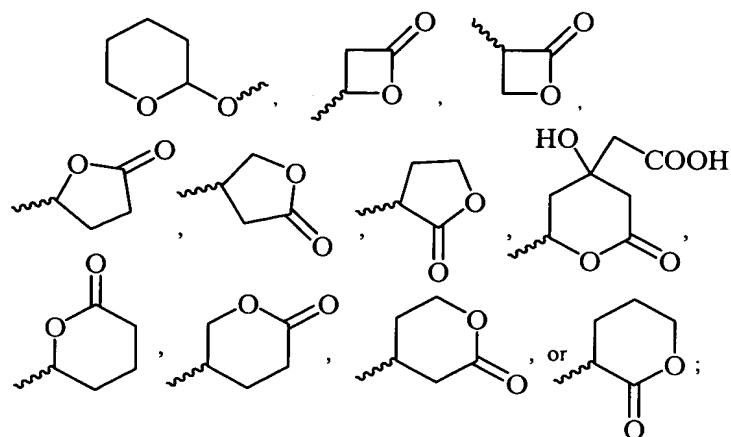
or a pharmaceutically acceptable salt, hydrate, solvate, or mixture thereof, wherein

- (a) each occurrence of Z is independently  $CH_2$ ,  $CH=CH$ , or phenyl where each occurrence of m is independently an integer ranging from 1 to 9, but when Z is phenyl then m is 1;
- 15 (b) G is  $(CH_2)_x$ ,  $CH_2CH=CHCH_2$ ,  $CH=CH$ ,  $CH_2$ -phenyl- $CH_2$ , or phenyl, where x is 1 to 7,
- (c)  $W^1$  and  $W^2$  are independently L, V, G,  $C(R^1)(R^2)-(CH_2)_c-C(R^3)(R^4)-(CH_2)_n-Y$ , or  $C(R^1)(R^2)-(CH_2)_c-V$  where c is 1 or 2 and n is an integer ranging from 0 to 7; when G is  $(CH_2)_x$ , where x is 1, 2, 3, or 4,  $W^1$  is  $CH_3$ ;
- 20 (d) each occurrence of  $R^1$  or  $R^2$  is independently -H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl, phenyl, or benzyl or when one or both of  $W^1$  and  $W^2$  is  $C(R^1)(R^2)-(CH_2)_c-C(R^3)(R^4)-(CH_2)_n-Y$ , then  $R^1$  and  $R^2$  can both be H to form a methylene group;
- (e)  $R^3$  is H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl,  $(C_1-C_6)$ alkoxy, phenyl, benzyl, Cl, Br, CN,  $NO_2$ , or  $CF_3$ ;
- 25 (f)  $R^4$  is H, OH,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl,  $(C_1-C_6)$ alkoxy, phenyl, benzyl, Cl, Br, CN,  $NO_2$ , or  $CF_3$ ;



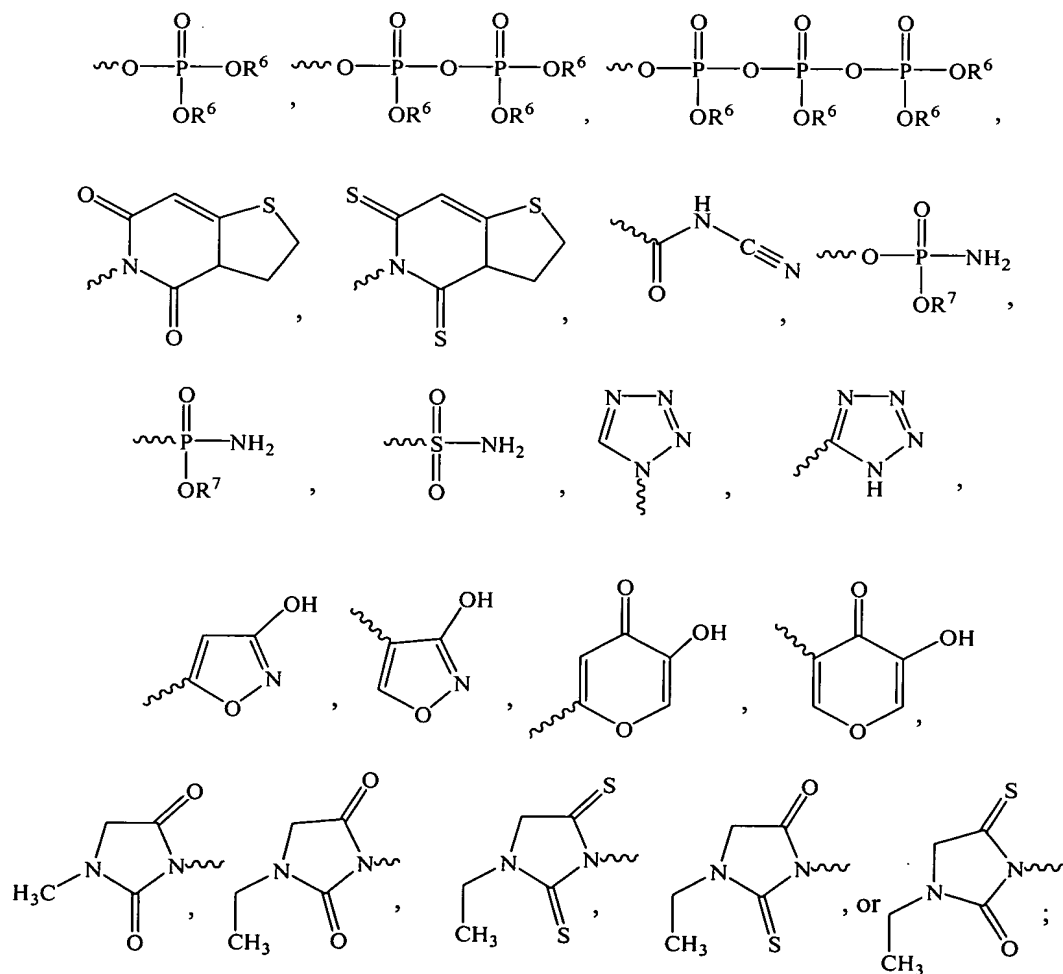
(g) L is  $C(R^1)(R^2)-(CH_2)_n-Y$ ;

(h) V is:



(i) each occurrence of  $Y^1$  and  $Y^2$  is independently H,  $CH_3$ , OH,  $COOH$ ,  $CHO$ ,  $COOR^5$ ,  $SO_3H$ ,

5



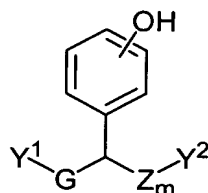
wherein:

(i)  $R^5$  is H, (C<sub>1</sub>-C<sub>6</sub>)alkyl, (C<sub>2</sub>-C<sub>6</sub>)alkenyl, (C<sub>2</sub>-C<sub>6</sub>)alkynyl, phenyl, or benzyl and is unsubstituted or substituted with one or more halo, OH, (C<sub>1</sub>-C<sub>6</sub>)alkoxy, or phenyl groups,

5 (ii) each occurrence of  $R^6$  is independently H, (C<sub>1</sub>-C<sub>6</sub>)alkyl, (C<sub>2</sub>-C<sub>6</sub>)alkenyl, or (C<sub>2</sub>-C<sub>6</sub>)alkynyl and is unsubstituted or substituted with one or two halo, OH, (C<sub>1</sub>-C<sub>6</sub>)alkoxy, or phenyl groups; and

(iii) each occurrence of  $R^7$  is independently H, (C<sub>1</sub>-C<sub>6</sub>)alkyl, (C<sub>2</sub>-C<sub>6</sub>)alkenyl, or (C<sub>2</sub>-C<sub>6</sub>)alkynyl.

10 34. A compound of the formula IX:

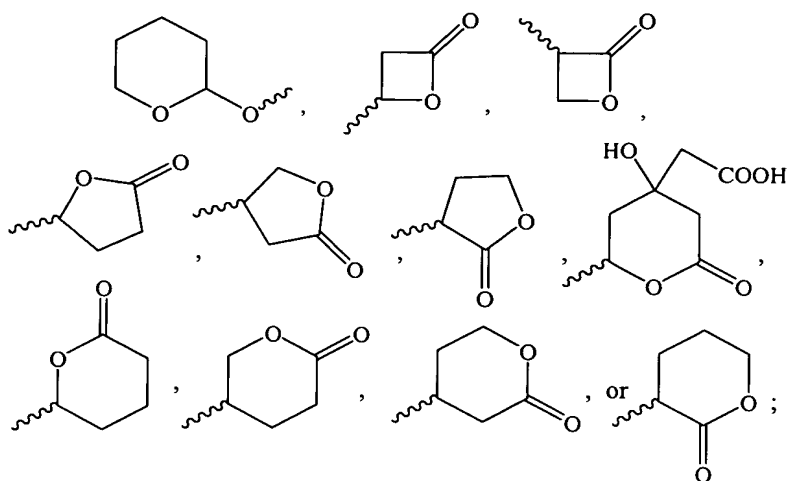


IX

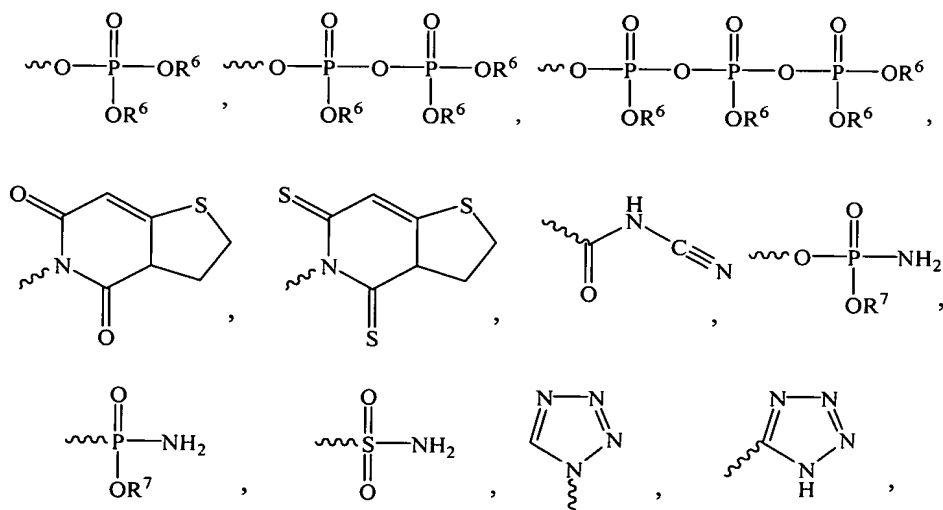
or pharmaceutically acceptable salt, hydrate, solvate, or mixture thereof, wherein

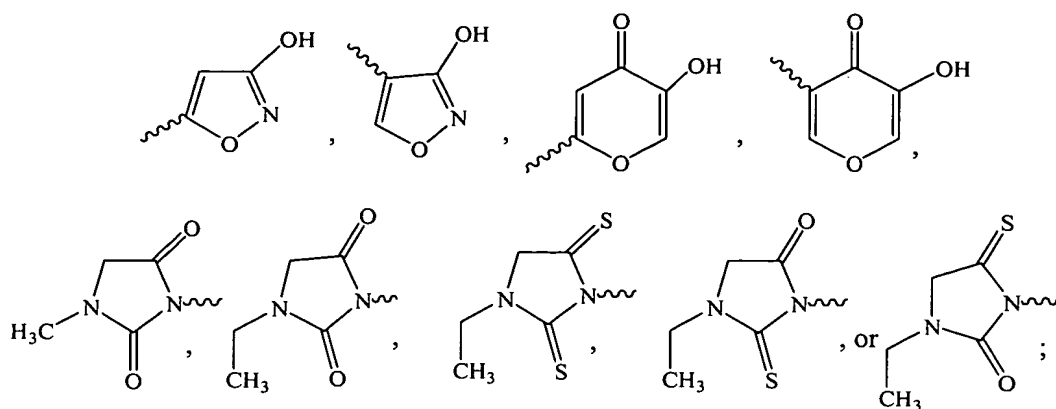
- 15 (a) each occurrence of Z is independently CH<sub>2</sub>, CH-CH, or phenyl, where each occurrence of m is independently an integer ranging from 1 to 9, but when Z is phenyl then its associated m is 1;
- (b) G is (CH<sub>2</sub>)<sub>x</sub>, where x is 1 to 7, CH<sub>2</sub>CH=CHCH<sub>2</sub>, CH=CH, CH<sub>2</sub>-phenyl-CH<sub>2</sub>, or phenyl;
- 20 (c) W<sup>1</sup> and W<sup>2</sup> are independently L, V, C(R<sup>1</sup>)(R<sup>2</sup>)-(CH<sub>2</sub>)<sub>c</sub>-C, or C(R<sup>3</sup>)(R<sup>4</sup>)-(CH<sub>2</sub>)<sub>n</sub>-Y or C(R<sup>1</sup>)(R<sup>2</sup>)-(CH<sub>2</sub>)<sub>c</sub>-V where c is 1 or 2 and n is an integer from 0 to 4; when G is (CH<sub>2</sub>)<sub>x</sub>, where x is 1 to 7, W<sup>2</sup> is CH<sub>3</sub>;
- (d) each occurrence of R<sup>1</sup> or R<sup>2</sup> is independently (C<sub>1</sub>-C<sub>6</sub>)alkyl, (C<sub>2</sub>-C<sub>6</sub>)alkenyl, (C<sub>2</sub>-C<sub>6</sub>)alkynyl, phenyl, or benzyl, and R<sup>1</sup> and R<sup>2</sup> can both be H when one or both of W<sup>1</sup> and W<sup>2</sup> is C(R<sup>1</sup>)(R<sup>2</sup>)-(CH<sub>2</sub>)<sub>c</sub>-C(R<sup>3</sup>)(R<sup>4</sup>)-(CH<sub>2</sub>)<sub>n</sub>-Y;
- 25

- (e)  $R^3$  is H, (C<sub>1</sub>-C<sub>6</sub>)alkyl, (C<sub>2</sub>-C<sub>6</sub>)alkenyl, (C<sub>2</sub>-C<sub>6</sub>)alkynyl, (C<sub>1</sub>-C<sub>6</sub>)alkoxy, phenyl, benzyl, Cl, Br, CN, NO<sub>2</sub>, or CF<sub>3</sub>;
- (f)  $R^4$  is OH, (C<sub>1</sub>-C<sub>6</sub>)alkyl, (C<sub>2</sub>-C<sub>6</sub>)alkenyl, (C<sub>2</sub>-C<sub>6</sub>)alkynyl, (C<sub>1</sub>-C<sub>6</sub>)alkoxy, phenyl, benzyl, Cl, Br, CN, NO<sub>2</sub>, or CF<sub>3</sub>;
- 5 (g) L is C(R<sup>1</sup>)(R<sup>2</sup>)-{CH<sub>2</sub>}<sub>n</sub>-Y;
- (h) V is:



- (i) each occurrence of Y<sup>1</sup> and Y<sup>2</sup> is independently OH, COOH, CHO, COOR<sup>5</sup>, SO<sub>3</sub>H,





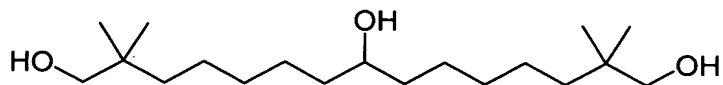
wherein:

(i)  $R^5$  is  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl, phenyl, or benzyl and is unsubstituted or substituted with one or more halo, OH,  $(C_1-C_6)$ alkoxy, or phenyl groups,

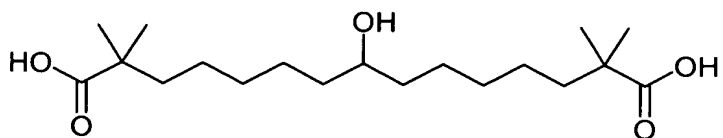
(ii) each occurrence of  $R^6$  is independently H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl, or  $(C_2-C_6)$ alkynyl and is unsubstituted or substituted with one or two halo, OH,  $(C_1-C_6)$ alkoxy, or phenyl groups; and

(iii) each occurrence of  $R^7$  is independently H,  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl, or  $(C_2-C_6)$ alkynyl.

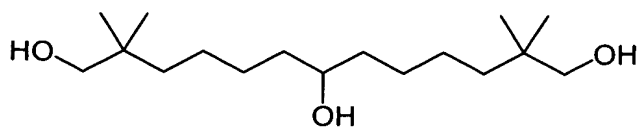
35. A compound of structure:



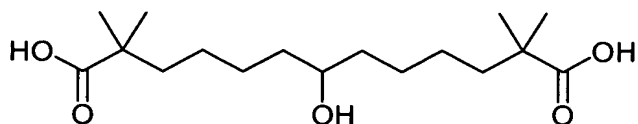
2,2,14,14-Tetramethyl-pentadecane-1,8,15-triol;



8-Hydroxy-2,2,14,14-tetramethyl-pentadecanedioic acid;



2,2,12,12-Tetramethyl-tridecane-1,7,13-triol;



7-Hydroxy-2,2,12,12-tetramethyl-tridecanedioic acid;

36. A pharmaceutical composition comprising a compound of claim 1, 11, 28,  
 5 29, 30, 31, 32, 33, 34, or 35 and a pharmaceutically acceptable vehicle, excipient, or diluent.

37. A pharmaceutical composition comprising a compound of claim 1, 11, 28,  
 29, 30, 31, 32, 33, 34, or 35 and further comprising a second therapeutic agent.

38. A method for treating or preventing aging, Alzheimer's Disease, cancer,  
 cardiovascular disease, diabetic nephropathy, diabetic retinopathy, a disorder of glucose  
 10 metabolism, dyslipidemia, dyslipoproteinemia, hypertension, impotence, inflammation,  
 insulin resistance, lipid elimination in bile, obesity, oxysterol elimination in bile,  
 pancreatitis, pancreatitis, Parkinson's disease, a peroxisome proliferator activated receptor-  
 associated disorder, phospholipid elimination in bile, renal disease, septicemia, Syndrome  
 X, thrombotic disorder, modulating C reactive protein, or enhancing bile production in a  
 15 patient, comprising administering to a patient in need of such treatment or prevention a  
 therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29, 30,  
 31, 32, 33, 34, or 35.

39. A method for treating or preventing a cardiovascular disease in a patient,  
 comprising administering to a patient in need of such treatment or prevention a  
 20 therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29,  
 30, 31, 32, 33, 34, or 35.

40. A method for treating or preventing a dyslipidemia in a patient, comprising  
 administering to a patient in need of such treatment or prevention a therapeutically,  
 effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.

25 41. A method for treating or preventing a dyslipoproteinemia in a patient,  
 comprising administering to a patient in need of such treatment or prevention a  
 therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29,  
 30, 31, 32, 33, 34, or 35.

42. A method for treating or preventing a disorder of glucose metabolism in a patient, comprising administering to a patient in need of such treatment or prevention a therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.

5 43. A method for treating or preventing Alzheimer's disease in a patient, comprising administering to a patient in need of such treatment or prevention a therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.

10 44. A method for treating or preventing Syndrome X in a patient, comprising administering to a patient in need of such treatment or prevention a therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.

15 45. A method for treating or preventing septicemia in a patient, comprising administering to a patient in need of such treatment or prevention a therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.

20 46. A method for treating or preventing a thrombotic disorder in a patient, comprising administering to a patient in need of such treatment or prevention a therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.

47. A method for treating or preventing a peroxisome proliferator activated receptor associated disorder in a patient, comprising administering to a patient in need of such treatment or prevention a therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.

25 48. A method for treating or preventing obesity in a patient, comprising administering to a patient in need of such treatment or prevention a therapeutically or effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.

49. A method for treating or preventing pancreatitis in a patient, comprising administering to a patient in need of such treatment or prevention a therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.
- 5 50. A method for treating or preventing hypertension in a patient, comprising administering to a patient in need of such treatment or prevention a therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.
- 10 51. A method for treating or preventing renal disease in a patient, comprising administering to a patient in need of such treatment or prevention a therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.
52. A method for treating or preventing cancer in a patient, comprising administering to a patient in claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.
- 15 53. A method for treating or preventing inflammation in a patient, comprising administering to a patient in need of such treatment or prevention a therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.
- 20 54. A method for treating or preventing impotence in a patient, comprising administering to a patient in need of such treatment or prevention a therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.
- 25 55. A method for treating or preventing a neurodegenerative disease or disorder in a patient, comprising administering to a patient in need of such treatment or prevention a therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.

56. A method of inhibiting hepatic fatty acid synthesis in a patient, comprising administering to a patient in need thereof a therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.

57. A method of inhibiting sterol synthesis in a patient, comprising  
5 administering to a patient in need thereof a therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.

58. A method of treating or preventing metabolic syndrome disorders in a patient, comprising administering to a patient in need of such treatment or prevention a therapeutically or prophylactically effective amount of a compound of claim 1, 11, 28, 29,  
10 30, 31, 32, 33, 34, or 35.

59. A method of treating or preventing a disease or disorder that is capable of being treated or prevented by increasing HDL levels, which comprises administering to a patient in need of such treatment or prevention a therapeutically effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.

60. A method of treating or preventing a disease or disorder that is capable of  
15 being treated or prevented by lowering LDL levels, which comprises administering to such patient in need of such treatment or prevention a therapeutically effective amount of a compound of claim 1, 11, 28, 29, 30, 31, 32, 33, 34, or 35.

61. A pharmaceutical composition comprising a compound of claim 1, 11, 28,  
20 29, 30, 31, 32, 33, 34, or 35 and a pharmaceutically acceptable vehicle, excipient, or diluent which is administered in combination with a statin.